

NORTH AMERICAN TWO-WINGED FLIES OF
THE GENUS *DORYPHOROPHAGA*,
(TACHINIDÆ, DIPTERA)

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A synopsis of the tachinid genus *Doryphorophaga* with key to species and descriptions of four apparently new species are presented on the following pages. Types of the new species are in my collection.

Townsend described *Doryphorophaga* (Proc. Ent. Soc. Wash., Vol. 14, 1912, p. 164), with *Lydella doryphoræ* Riley¹ as the type and sole species. The description is largely in the form of a comparison with related genera and since few of the essential characters are mentioned the genus is briefly recharacterized below. The type species, *doryphoræ*, is widely distributed in the United States and is known as a rather common parasite of the Colorado potato beetle, *Leptinotarsa decemlineata* Say.

The only other known species is *D. aberrans* Townsend (Ent. News, Vol. 27, 1916, p. 217). It is also a parasite of the same beetle and was described from the male only. In 1931 Townsend designated *aberrans* the type species of *Adoryphorophaga*, new genus, (Revista Entomologia, Vol. 1, 1931, p. 469). The female differs from *doryphoræ* mainly in lacking a piercer and stout recurved spines on the middle coxæ. However there are apparently no structural characters of generic importance to distinguish the males.

The generic characters of *Doryphorophaga* (from the type species) may be briefly given as follows: Vibrissal axis of head much shorter than antennal; eyes hairy, often indistinctly so; facial ridges bristled on lower half to two-thirds; parafacials bare; ocellars distinct, proclinate; front moderately wide to vertex and two pairs of orbital bristles in both sexes; frontal bristles extending about to apex of second antennal segment; antennæ a little shorter than face; arista practically bare, basal

¹ First Report, Insects of Missouri, 1869, p. 111.

segments short; vibrissæ nearly on level with front edge of mouth; palpi normal in size; proboscis short. Propleura and metanotal slopes beneath calypters bare; prosternum haired at sides. Abdomen with small discals on intermediate segments, often lacking on one or both; female genitalia with an exposed strongly bowed and sharp-tipped piercer; inner forceps in male ordinary but outer ones unusually slender and elongated. Claws and pulvilli short in both sexes; middle coxæ in female bearing a comblike row of about five heavy spines. Wing venation normal; bend of fourth vein without a stump; apical cell open well before extreme wing tip; veins bare except base of third; costal spine small.

KEY TO SPECIES OF DORYPHOROPHAGA

1. Female with a distinct piercer and a comblike row of heavy recurved spines on middle coxæ; outer forceps in male very slender and about one-fourth longer than inner pair *Doryphorophaga* 2
 Female genitalia not adapted for piercing, the middle coxæ without any unusual bristles; outer forceps in male barely exceeding length of inner ones *Adoryphorophaga* 4
2. Parafacial distinctly wider than third antennal segment 3
 Parafacial narrower below, with at most subshining gray pollen; front in both sexes about equal eye width; third antennal segment four to six times longer than second; male with patches of fine short hairs on venter of third and fourth abdominal segments, (Texas, Ohio, Michigan, Iowa) *macella*, new species.
3. Sides of front and face silvery or gray, (United States, widespread) *doryphoræ* Riley.
 Sides of front and face with shining brownish pollen in male, usually paler or yellowish-gray in female, (Texas) *australis*, new species.
4. Mesonotum with dense pollen and conspicuously vittate; hairs on abdominal segments two and three depressed 5
 Mesonotum blackish and subshining, showing no well defined stripes; abdominal hairs suberect; outer forceps in male very slender; hind tibia bearing a row of long closely spaced cilia; male only, (Ohio, Texas) *sedula*, new species.
5. Fourth abdominal segment without well differentiated discals; antennæ usually reddish; ocellars small or vestigial; outer forceps in male rather broad to apex in profile; female genitalia retracted, terminating in a tapering blunt-tipped organ, (New England to Missouri).
aberrans Townsend.
 Fourth abdominal segment bearing a row of strong discals; antennæ wholly black; ocellars distinct; female genitalia laterally compressed

with the apex broadly rounded as viewed from the side; eyes very indistinctly haired; female only, (Ohio, Texas)*patrita*, new species.

Doryphorophaga doryphoræ Riley

Lydella doryphoræ Riley, First Report, Insects of Missouri, 1869, p. 111.

Doryphorophaga doryphoræ Townsend, Proc. Ent. Soc. Wash., Vol. 14, 1912, p. 164.

There are numerous other references to the species in literature. Except in the Southwest it is apparently the commonest member of the genus. The species is very similar to *australis*, described below, but as indicated in the key differs in having the sides of the face and front silvery-gray. These items with the characters mentioned in the generic description seem sufficient to readily place the species. At College Station, it has been taken from April to October but in fewer numbers than the following species.

Doryphorophaga australis new species

MALE.—Sides of front and face including cheeks with shining brownish-yellow pollen the posterior orbits paler or yellowish-gray; front quite uniform in width and not very prominent below, at vertex 0.286 of the head width (five specimens measured: 0.28; 0.29; 0.28; 0.28; 0.30); parafrontals sparsely short-haired; median stripe red, about as wide as one parafrontal except on lower extremity; ocellar bristles well developed; orbitals two pairs, proclinate; inner verticals strong, outer ones about one-half as large; frontal rows diverging beneath antennæ to base of third segment, uppermost two bristles reclinate; parafacials bare, distinctly wider than third antennal segment; face moderately excavated, gray pollinose, its ridges strongly diverging downward, bearing bristles on about lower two-thirds; antennæ black, reaching to lowest fourth of face, third segment about four times longer than second; arista blackish, thickened on proximal fourth to third; eyes varying from practically bare to distinctly hairy; proboscis short and thick; palpi yellow becoming blackish basally, beset with black hairs on apical half; cheeks red in ground color, moderately black-haired below, about one-fifth the eye height; back of head flat, gray pollinose, sparsely clothed with short whitish hairs.

Thorax black, gray pollinose; mesonotum marked with four black subshining stripes before the suture and five behind, outer ones widest and interrupted at suture; scutellum black, gray pollinose, disk bearing numerous erect short hairs. Chaetotaxy: acrostichal 3,3; dorsocentral 3,3; intralar 3; supraalar 3; humeral 3; posthumeral 2; presutural 2; notopleural 2;

postalar 2; pteropleural 1 (small); sternopleural 2,1; scutellum with 3 marginal, 1 smaller upturned apical and 1 discal pair; propleura and sides of postnotum bare; calypters whitish or faintly tawny.

Abdomen black, with gray pollen extending to apical third or fourth of intermediate segments and interrupted on median line by a narrow dark stripe; anal segment polished beyond the narrow basal pollen band which tapers toward side margin; ventral surface of segment four bearing large patches of fine short hairs extending upward on sides; discal bristles on intermediate segments variable, frequently absent on one or both; basal segments each with a pair of rather short median marginals; third bearing a row of ten or twelve; fourth with a discal and a marginal row; genital segments of moderate size, reddish-black; outer forceps slender from base to tip, about one-fourth longer than inner ones which are of an ordinary type, divided beyond middle but not divergent; fifth sternite deeply incised, lobes black, bearing a few long slender hairs.

Legs black; middle tibia bearing one strong bristle on outer front side near middle; hind tibia with a row of somewhat uneven bristles on the outer posterior margin; pulvilli and claws shorter than last tarsal segment.

Wings grayish hyaline; fourth vein with a rounded stumpless bend, thence approaching costa in a diagonal direction narrowing first posterior cell which is open shortly before extreme wing tip; third vein bearing two or three setulae at base; hind cross vein oblique to fourth which it joins a little nearer bend than small cross vein; costal spine inconspicuous; epaulets black.

FEMALE.—Sides of face and front usually paler yellow than in male; front at vertex 0.316 of the head width (five specimens measured: 0.32; 0.31; 0.32; 0.31; 0.32); eyes inconspicuously short-haired; piercer of moderate length, strongly bowed forward tapering to an acute tip and grooved behind; middle coxæ bearing a row of five rather blunt-tipped backwardly directed spines; otherwise similar to male.

Length, 6.5 to 9 mm.

Described from 164 specimens (both sexes) collected at College Station, Texas, May to October, 1917–1934 (H. J. Reinhard); 1 female, San Antonio, January 28, 1929 (H. B. Parks); and 1 female Comanche Co., June 8, 1928 (V. A. Little).

Although the present species may be readily distinguished from *doryphoræ* by the brownish-yellow face and front, the structural differences in these forms are very slight. It has been reared at College Station from *Leptinotarsa decemlineata* Say and *L. defecta* Stal.

***Doryphorophaga macella* new species**

MALE.—Front at vertex 0.325 of the head width (four measured: 0.34; 0.32; 0.31; 0.33), hardly any wider at base of antennæ; parafrontals gray

pollinose to vertex and practically bare outside of frontal rows; median stripe dark red or blackish, wider than one parafrontal on upper half; verticals two pairs, outer ones divergent, about one-half the size of inner pair; ocellars well developed, proclinate; frontal bristles in a single row reaching to base of third antennal segment, uppermost bristle considerably shorter than preceding one and both reclinate, others directed inward; orbitals two pairs, proclinate; antennæ black, reaching almost to mouth, third segment five to six times the length of second and about as wide as parafacial on lower part; arista shorter than antennæ, blackish and finely pubescent, thickened on basal third, middle segment short; face gray pollinose, its ridges bristled on lower three-fourths; vibrissæ on level with mouth; parafacials with subshining gray pollen, bare; proboscis short and thick, labella fleshy; palpi yellow infuscated basally; cheeks gray pollinose, sparsely haired on lower margin, about one-fifth the eye height; eyes practically bare, back of head thinly clothed with pale hairs.

Thorax black, dusted with gray pollen which is interrupted by four narrow black stripes on the mesonotum; scutellum wholly black, with rather thin dull gray pollen extending from base to apex. Chaetotaxy as in *australis*, but with only one posthumeral bristle present; postscutellum normal, gray pollinose; infrasquamal hairs absent; calypters opaque, white usually tinged with yellow.

Abdomen shining black, with broad basal bands of gray pollen on intermediate segments, interrupted along median line and somewhat changeable behind; fourth segment with a defined silvery pollen band which extends to basal fifth at middle above tapering towards the side, remainder of upper surface highly polished; venter with patches of soft short hairs on anal segment which extend forward on hind margin of third; discal bristles usually weak and sometimes absent on third segment; basal segments each with one pair of median marginals (small or vestigial on first); third bearing a marginal row of about eight; fourth with a discal and a marginal row; genitalia as in *doryphoræ*.

Legs black; claws and pulvilli short; middle tibia with one large anterodorsal bristle; hind tibia bearing a row of uneven bristles on outer posterior side with one near middle stouter.

Wings grayish hyaline; costal spine small; venation as in *doryphoræ*.

FEMALE.—Front at vertex 0.338 of the head width (five measured as follows: 0.33; 0.35; 0.32; 0.35; 0.34), widening slightly downward; third antennal segment about five times longer than second; abdomen shining black, basal third of last three segments with silvery pollen bands; first segment without median marginals and discals usually absent on segments two and three; genitalia and spines on middle coxæ as in *doryphoræ*.

Length, 5 to 6 mm.

Described from 44 specimens as follows: Four males (including holotype) and 33 females, College Station, Texas, April–October,

1917-35 (H. J. Reinhard); 2 males, San Antonio, Texas, January 28, 1929, and November 30, 1930 (H. B. Parks); 2 males and 1 female, Amherst, Ohio, July 1933-4 (H. J. Reinhard); 1 male, Iowa, June 2, 1932 (Barker); and 1 male, Ag. Coll. Michigan, September 6, 1922 (L. G. Gentner).

The wider front, longer third antennal segment, and narrower parafacials distinguish the species from *doryphoræ*, to which it seems closely related. The male shows an additional difference in having patches of fine short hairs on the ventral side of the third abdominal segment as well as on the fourth.

Doryphorophaga aberrans Townsend

Doryphorophaga aberrans Townsend, Ent. News, Vol. 27, 1916, p. 217.

Adoryphorophaga aberrans Townsend, Revista Entomologia, Vol. 1, 1931, p. 469.

The species was originally described from four male specimens reared from *Leptinotarsa decemlineata* Say and *Blepharida rhois* Forst. at Blacksburg, Virginia. A more complete description, including both sexes, was published by Smith in 1917 (Proc. Ent. Soc. Wash., Vol. 19, p. 124). Throughout its range of distribution the species seems most common in the northeastern states. There are two males in my collection from Atherton, Missouri, and Amherst, Ohio, besides a female from Harrisburg, Pennsylvania. In the latter sex the terminal part of the genitalia, although tapering and slightly projecting, is blunt or rounded on the apex. The ocellars are small or vestigial in both sexes; eyes indistinctly haired, and the third antennal segment reddish on basal part. In the male the two pairs of genital forceps are ordinary and about of equal length; inner pair gradually tapering outward, contiguous to the tip; outer ones rather broad and somewhat bowed, with the apex rounded as viewed from the side.

Doryphorophaga sedula new species

MALE.—Front (before vertex) 0.252 of the head width (average of four: 0.23; 0.25; 0.28; 0.25), widening uniformly downward, parafrontals gray pollinose becoming brownish near vertex, moderately clothed with fine black hairs which extend close to margin of eye on upper part; median stripe dark

brown, much narrower than one parafrontal on the entire length, extending on either side of triangle to vertex; inner verticals and two proclinate orbitals well developed; ocellars of almost normal size, divergent and proclinate; frontal bristles descending to base of third antennal segment, upper two bristles reclinate the others directed inward; antennæ nearly as long as face, black, third segment tinged with red on extreme base and fully four times longer than second; arista with short basal segments, thickened on proximal third, blackish and finely pubescent; parafacial bare, with gray or almost silvery pollen, on narrowest part but little wider than third antennal segment; facial ridges bearing weak bristles on lower third; vibrissæ on level with mouth; proboscis short and fleshy, labella large; palpi ordinary, yellow beyond the infuscated base and beset with numerous black hairs; cheeks red in ground color, thinly gray pollinose and clothed with fine black hairs, about one-sixth the eye height; eyes indistinctly haired; back of head moderately clothed with rather short pale hairs.

Thorax black, thinly gray pollinose; mesonotum subshining but showing traces of stripes in a flat rear view; scutellum wholly black, lightly sprinkled with changeable gray pollen, disk clothed with erect hairs. Thoracic chætotaxy as mentioned under *australis*, but the apical scutellars are almost horizontal; infrasquamal hairs present; postscutellum normal, pale membranous above; calypters opaque, white.

Abdomen broadly reddish on the sides; last three segments wholly covered with grayish-white pollen, the hind edges of each in certain angles appearing darker; hairs on the upper surface erect; intermediate segments with a pair of moderate-sized discals, and the basal ones each with one pair of median marginals; third bearing a marginal row of ten or twelve; fourth with the entire upper surface bristly except along basal margin; inner forceps slender, divided beyond middle but not divergent, flat and densely pubescent behind almost to tip; outer ones reddish, very slender and a trifle longer than inner pair; fifth sternite deeply divided, the lobes black.

Legs rather slender, black; all claws and pulvilli shorter than last tarsal segment; middle tibia with one bristle on the outer front side near middle; hind tibia ciliated with one slightly stouter but not much longer bristle beyond middle of row.

Wings subhyaline; costal spine minute; fourth vein with a rounded stumpless bend, thence oblique toward costa and slightly bowed outward before the tip; apical cell open well before extreme wing tip; veins bare except third which bears two setules at base; hind cross vein bicurved, oblique to fourth and joining it distinctly nearer bend than small cross vein.

Length, 6.5 mm. Female unknown.

Described from twelve specimens as follows: 10 males (including holotype), Amherst, Ohio, July-Aug., 1934-35 (H. J. Reinhard); 1 male, Paris, Texas, June 27, 1926 (H. J. Reinhard); and 1 male, Canadian, Texas, May 3, 1931 (S. E. Jones).

Without reference to the genitalia the species might be confused with *aberrans*, which it resembles in general appearance except that the mesonotum is blacker and shows no defined vittæ and the abdomen is broadly reddish on the sides. Additional differences are mentioned in the key and descriptions.

***Doryphorophaga patrita* new species**

Similar to *sedula*, from which it differs in the following characters: Front in female at vertex 0.306 of the head width (average of five: 0.31; 0.30; 0.30; 0.32; 0.30), widening gradually toward antennæ, the sides sparsely haired; outer verticals three-fourths as long as inner ones; facial ridges bearing bristly hairs on lower third or less; cheek densely gray pollinose and about one-fifth the eye height. Eyes practically bare. Thorax with dense gray pollen above, showing four narrow but distinct stripes before suture and five behind; chætotaxy as in *australis*, but the apical scutellars horizontal. Abdomen wholly black and subshining; hairs on dorsal surface depressed; last three segments with grayish pollen showing reflecting spots on either side of median line on the middle segments which change from light to dark when viewed in opposite angles; genitalia distinctive, somewhat compressed laterally and consisting of two convex plates which appear united along the median line behind with a slitlike opening near the anterior end, in profile this organ is broadly rounded and not fitted for piercing. Middle coxæ without any unusual spines. Hind tibia bearing a row of about ten fairly even bristles on the outer posterior side, one near middle considerably stouter.

Length, 6.5 mm. Male unknown.

Described from ten specimens from Amherst, Ohio, July–August, 1933–35 (H. J. Reinhard).

The species differs from all the forms here included in the structure of the female genitalia. In most details it agrees with *aberrans*, but the ocellars are normal in size and the eyes are more indistinctly haired.